Tunisia

Water Supply and Sewage System Improvement Project in Southern Tunisia

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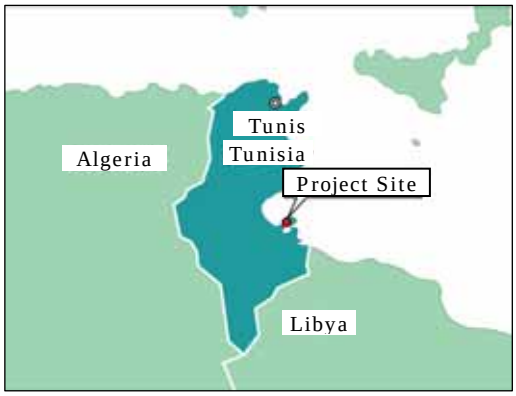
Field Survey: September 2004

1. Project Profile and Japan's ODA Loan



Region map of project site

Jerba Desalinization Plant

1.1 Background

Situated in southern Tunisia are the governate of Medenine (population 400,000 in 1995 appraisal (cf. nearly the same as the population of Toyota City, Aichi Prefecture, Japan)) and the governate of Tataouine (population of 140,000 in 1995 appraisal (cf. nearly the same population as Urayasu City, Chiba Prefecture, Japan). Between 1966 and 1984, the population of Medenine increased by 2.7%, and the population of Tataouine increased by 3.1%, which were higher than the rate of 2.4% for Tunisia overall. The number of water tap contracts in the two governates increased by 8.3% annually between 1987 and 1992, which exceeded the 6.4% increase in Tunisia overall. Moreover, the average daily amount of water supplied per person in the two governates was 90 liters in Medenine and 54 liters in Tataouine, both of which were less than the 94 liters for Tunisia overall. The coverage rate for water pipes was 62.4% in Medenine and 74.3% in Tataouine, against 85.7% for Tunisia as a whole. Furthermore, in southern Tunisia water was supplied from deep wells, but the average salinity concentration was high, at 2,600 mg/l, which exceeded the Tunisian standard of 2,500 mg/l[1].

Jerba Island (514 km^2, approximately 90% of Awajisima, Hyogo Prefecture, Japan), which is one of the preeminent resorts in Tunisia, had 22,000 hotel beds in 1995. The Tunisian Ministry of Tourism, Trade, and Handicrafts planned to expand the number of hotel beds to

[1] The standard of WHO is 1,000 mg/l or less. The standard in Japan is 500 mg/l or less.

35,000 beds in the first expansion phase (1996) and 70,000 beds in the second expansion phase (2006). However, the existing three sewage treatment facilities in the area of the hotels had a capacity for only 12,000 beds. Also, the Midoun area of the same island was experiencing remarkable population growth due to the development of the tourism industry, but the living condition there was deteriorating due to lack of sewers.

1.2 Objective

The project's objective was to ensure the supply of water and the treatment of household and industrial wastewater by installing a water supply and sewage system in Jerba and Zarzis, etc., which are tourism centers in southern Tunisia, thereby contributing to the improvement of the area residents' living condition and sanitation environment and to the promotion of the tourism industry.

1.3 Borrower/Executing Agency

Government of the Republic of Tunisia/
Water Supply: Societe Nationale d'Exploitation Et de Distribution Des Eaux (SONEDE)
Sewage: Office National de l'Assainssement (ONAS)

1.5 Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	7,577 million yen/6,530 million yen
Exchange of Notes/Loan Agreement	February 1995/March 1995
Terms and Conditions -Interest Rate -Repayment Period (Grace Period) -Procurement	 3.0% 25 years (7 years) General Untied
Final Disbursement Date	December 2002
Contractors	Mitsubishi Corporation・CADAGUA (Japan・Spain), EURAFRICAINE BREDERO (Tunisia), SICOAC (Tunisia), etc.
Consultants	CARL BRO INTERNATIONAL・SOCIETE D'INGENIERI (Great Britain, Tunisia), SCET-TUNISIE (Tunisia)
Feasibility Study (F/S), etc.	Water Supply F/S (1990): SONEDE Sewer F/S (1993): ONAS

2. Results and Evaluation

2.1 Relevance

2.1.1 Relevance of the Plan at the Time of Appraisal

In Tunisia's 8th national development plan (1992-1996), installation of social infrastructure including water and sewage systems was upheld as an important policy from the standpoint of supporting private sector growth. The coverage rate for both the water system and the sewage system in southern Tunisia was lower than the average for the country overall, and thus

installation of water and sewage systems in southern Tunisia was a priority issue. This project was to promote the installation of water and sewage systems in Jerba (population 115,000 in 1995) and Zarzis (population 67,000 in 1995), etc., which are tourism centers in southern Tunisia, and therefore had a high priority.

2.1.2 Relevance of the Plan at the Time of the Evaluation

In Tunisia's 10th national development plan (2002-2006), installation of water and sewage systems is upheld as an important policy from the standpoints of environmental conservation and improvement of living standards. The demand for water in southern Tunisia is expected to increase by 18% in the next five years, and thus provision of water supply for the area continues to be a priority issue. Furthermore, the demand for sewage capacity is expected to increase in parallel, and thus the provision of a sewage system for the area is also a priority issue. This project is to promote the installation of water and sewage systems in Jerba and Zarzis, etc., which are tourism centers in southern Tunisia, and therefore its importance continues to remain high.

2.2 Efficiency

2.2.1 Output

Table 1 below shows the output planned at the time of the appraisal and the actual performance.

Table 1: Output

Item	Planned (at Appraisal)	Actual Performance	Reason for Difference
Water Supply			
(a) Desalination Plants	Jerba 1 location (12,000 m3/day) Zarzis 1 location (12,000 m3/day)	Increased to 15,000 m3/day in both locations	Increased to meet demand for water that exceeded appraisal estimates
(b) Deep Wells	Jerba 3 locations, Zarzis 7 locations, Ben Guerdan 2 locations	Jerba 6 locations, Zarzis same as left, Ben Guerdan same as left	Jerba: Same as above
(c) Reservoirs	Jerba 1 location, Zarzis 1 location	Jerba 2 locations, Zarzis same as left, Medenine 1 location, Tataouine 1 location	Jerba, Medenine, Tataouine, same as above
(d) Aqueducts	Jerba 26km, Zarzis 37km, Ben Guerdan 60km	Jerba 40km, Zarzis 69km,Ben Guerdan same as left	Jerba, Zarzis: Extended in response to increase in deep wells and change of location
(e) Water Pipes	Jerba 91km	Same as left	—
(f) Pressure Pump Station	Medenine 1 location	Same as left	—
		Addition: Intake pump stations: one each in Medenine, Tataouine	—

Sewer			
(h) Sewage Treatment Plant	Jerba 1 location (15,750 m^3/day)	Same as left	—
(i) Pump Station	Jerba 5 locations	Same as left	—
(j) Sewer Pipes (mainline)	Jerba 23 km	Jerba 30 km	Extended due to change in location of the sewage treatment plant
(k) Sewer Pipes (branchline)	Jerba 7 km	Jerba 12 km	Extended to meet the demand for sewage capacity that exceeded the appraisal estimates
(l) Operation and Maintenance Vehicles	14 vehicles	Same as left	—

2.2.2 Project Period

The project period planned at the time of appraisal for the water supply and sewage system was March 1995 to June 1998 (40 months). However, the project period for the water supply system was actually March 1995 to February 2003 (96 months), which represents a delay of 56 months. (However, if the additional output is excluded, the project period was March 1995 to January 2001 (71 months), representing a delay of 31 months). On the other hand, the project period of the sewage system was March 1995 to December 2002 (94 months), a delay of 54 months.

Figure 1: Map of Project Site

The above-mentioned delay in the water supply system occurred due to (1) revised bidding on the deep well drilling work (12 months) and (2) evaluation of bids for procurement and laying of aqueduct and water pipes (extended from 3 months to 12 months). The delay in the sewage system occurred due to (1) evaluation of bids for construction of the sewage treatment plant (extended from 8 months to 24 months) and (2) processing of bids for purchase of operation and maintenance vehicles (extended from 8 months to 15 months) and delivery of the same vehicles (extended from 8 months to 19 months).

2.2.3 Project Cost

The project cost planned at the time of the appraisal was 10,102 million yen (with 7,914 million yen for the water supply and 2,188 million yen for the sewage system), but the actual cost of 7,267 million yen (with 5,623 million yen for water supply and 1,644 million yen for

sewage system) was less than the planned figure. The reasons for the decrease in cost included the fact that an exemption was granted on the value-added tax that was included in the original calculations and the fact that the land was provided free of charge.

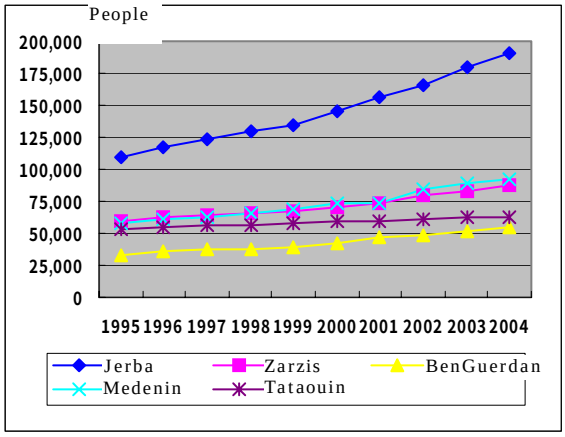
2.3 Effectiveness

2.3.1 Water

(1) Water Supply

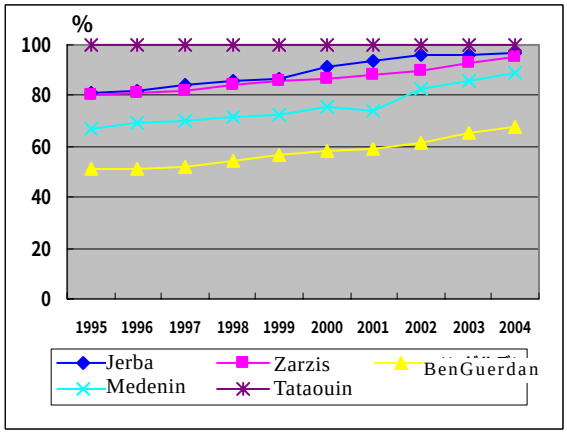
Comparing the water supply population[2] in Jerba, Zarzis, Ben Guerdan, Medenine, and Tataouine in 1999 prior to the completion of the project facilities and in 2004 following implementation, the population in Jerba grew 41%, from 135,000 persons to 190,000 persons; the population in Zarzis increased 30%, from 67,500 persons to 87,700 persons; the population in Ben Guerdan increased 38%, from 39,500 persons to 54,500 persons; the population in Medenine grew 33%, from 68,678 persons to 91,500 persons; and the population in Tataouine increased 9%, from 57,600 persons to 63,000 persons (Figure 2).

Figure 2: Water Supply Population



Source: SONEDE

Figure 3: Water System Coverage



Source: SONEDE

The water system coverage rate [3] increased 10% in Jerba, from 87% to 97%; increased 9% in Zarzis, from 86% to 95%; increased 11% in Ben Guerdan, from 57% to 68%; increased 17% in Medenine, from 72% to 89%; and remained steady at 100% in Tataouine. The water supply population and the water system coverage rate improved in the four areas, and following the implementation of the project, approximately 120,000 additional people obtained new access to water (Figure 3).

Likewise, the average daily water supply volume[4] increased in 2004 compared to 1999. The volume of water supplied increased by 28% in Jerba, from 24,365 m^3/day to 31,190

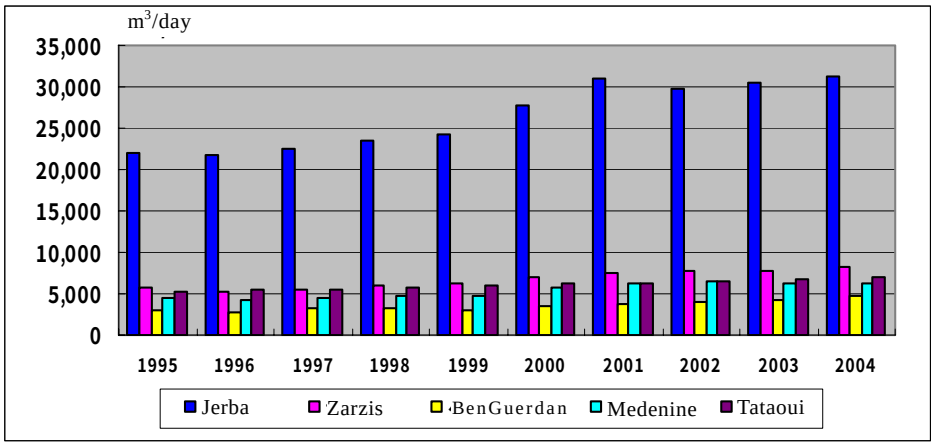
[2] Water Supply Population = number of general water contracts × persons per household. Tourists are not included in the water supply population.

[3] Water System Coverage Rate = water supply population÷resident population×100.

[4] Average Daily Water Supply Volume = amount of water consumed annually ÷ 365。

m^3/day; increased by 36% in Zarzis from 6,139 m^3/day to 8,337 m^3/day; increased by 53% in Ben Guerdan, from 3,068 m^3/day to 4,697m^3/day; increased by 34% in Medenine, from 4,735 m^3/day to 6,320m^3/day; and increased by 16% in Tataouine, from 5,962 m^3/day to 6,912m^3/day. The total water supply of 13,187m^3/day was increased over the 5 years (Figure 4). The water supplied in Jerba and Zarzis is a mixture of the low-saline water produced by the desalination plants in Jerba and Zarzis and high-saline water transported from the wells in Medenine and Tataouine. The water produced by the desalination plant in Zarzis is not only consumed in Zarzis, but some of it is also transported to Jerba.

Figure 4: Average Daily Water Supply Volume



Source: SONEDE

The percentage of leakage rate[5] fluctuated from 1999 through 2004 from 10% to 12% in Jerba, from 20% to 26% in Zarzis, from 18% to 10% in Ben Guerdan, from 29% to 31% in Medenine, and from 20% to 15% in Tataouine (Figure 5). The mail cause of the high percentage of leakage in Zarzis and Medenine lies in leakage of old pipes, according to the executing agency. Currently, the executing agency is promoting replacement of the water pipes to prevent leakage.

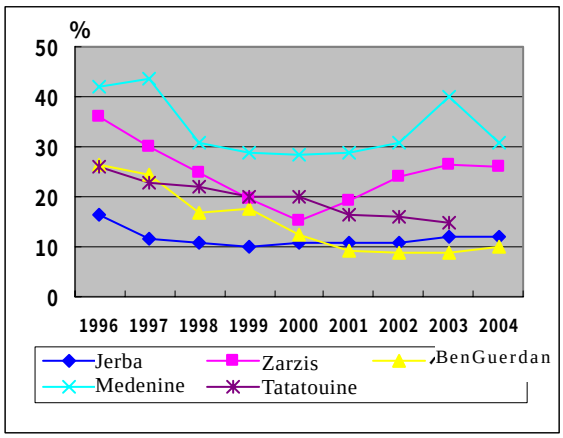
Figure 6 below displays the facility utilization rate[6] of the desalination plants constructed by this project. At the Jerba Desalination Plant, the facility utilization rate was 76% in 2000 at the time of the trial operation and 74% in 2001, but subsequently the rate declined slightly to 60% in 2002 and 66% in 2003. Likewise at the Zarzis Desalination Plant, the facility utilization rate improved dramatically from the 46% in 1999 at the trial operation to 86% in 2001, but subsequently the rate fell to 64% in 2002 and 76% in 2003. According to the

[5] Percentage of leakage rate = portion of average daily water production amount that was not billed ÷ average daily water production amount × 100

[6] Facility Utilization Rate = average daily water production amount of the desalination plant ÷ facility capacity of the desalination plant

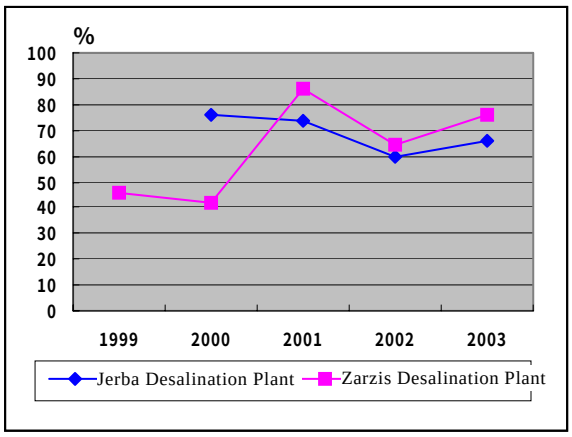
executing agency, the drop in the facility utilization rate at both plants results from the reduction in water consumption due to decline in tourists in both Jerba and Zarzis triggered by the 9-11 terrorism incident in the US and the terrorist bombing of a synagogue on Jerba Island. Meanwhile, Zarzis and Jerba are Tunisia's leading resorts, and thus water consumption is highest during the busy summer season and lowest during the quiet winter season. According to the executing agency, although the average annual facility utilization rate is in the 70% range, the summertime facility utilization rate is near 100%.

Figure 5: Percentage of Leakage Rate



Source: SONEDE
Note 1: The actual leakage rate in Tataouine in 2004 is unclear.

Figure 6: Facility Utilization Rate



Source: SONEDE
Note 1: Zarzis Desalination Plant began operation in August 1999, and Jerba Desalination Plant began operation in February 2000.ne in 2004 is unclear.

The saline concentration of the water supplied is meeting the goal set at the appraisal, which was less than 2,000mg/l, in the whole area benefiting from this project. Following the project, the water supplied in Jerba and Zarzis is a mixture of fresh water with less than 500mg/l saline concentration produced at the desalination plants and water with a high saline concentration (3,000mg/l transported from Medenine and Tataouine). In Medenine and Tataouine, the water supplied prior to the project was a mixture of water from high-saline wells and low-saline wells, but the water supplied after the project is only from low-saline wells. Moreover, lower-saline wells were developed and water is being supplied from them. Meanwhile in Ben Guerdan, the saline concentration is higher after the project than it was before, but this is due to a rise in the saline concentration of the water intake source. To remedy this situation, SONEDE is currently planning to lower the saline

Table 2: Saline Concentration

	1999 (Before Project)	2004 (After Project)
Jerba	3,000	1,370
Zarzis	2,500*	1,126
Ben Guerdan	1,400	1,700
Medenine	2,000	1,400
Tataouine	2,000	1,500

source：SONEDE (unit: mg/l)
*: actual 1998 figures

concentration of the water supplied in Ben Guerdan by developing water resources with a low saline concentration and mixing it with existing resources.

(2) Recalculation of Financial Internal Rate of Return (FIRR) of the Water Supply Portion

The financial internal rate of return (FIRR) for the water supply portion at the time of the appraisal was calculated as 3.6%, taking as expenses the construction cost and the operation and maintenance cost, taking as benefits the increase in water fee receipts due to this project, and assuming a project life of 43 years, including the construction period. When the FIRR was recalculated for the evaluation using the same conditions as for the appraisal, the result was 1.1%. The reason why the FIRR is lower than the planned figure in the appraisal is that benefits decreased due to the smaller-than-expected rate hike in the water fees. (At the appraisal, a rate hike of 7% annually was assumed, but currently the executing agency plans to raise rates by 7% every other year.)

2.3.2 Sewage System

(1) Treatment of Household and Industrial Wastewater

The areas that are covered by the sewage treatment plants newly are the Midoun area of western Jerba Island (population 50,000) and the coastal tourist zone where the resort hotels are concentrated. The sewage treatment population[7] increased by approximately 2.5 times, from 5,335 persons in 2000 prior to the project to 13,259 persons in 2004 following the project. Likewise, the sewer coverage rate[8] doubled from 13% in 2000 prior to the project to 27% in 2004 following the project (Figure 7). However, the executing agency (ONAS) calculates the above-mentioned sewage treatment population and the sewer coverage rate based on the number of residents in the areas that benefited from the project and does not include the hotel guests in the resort zone which also benefited from this project. If the hotel guests were included in the sewage treatment population, the effect of the project would be larger.

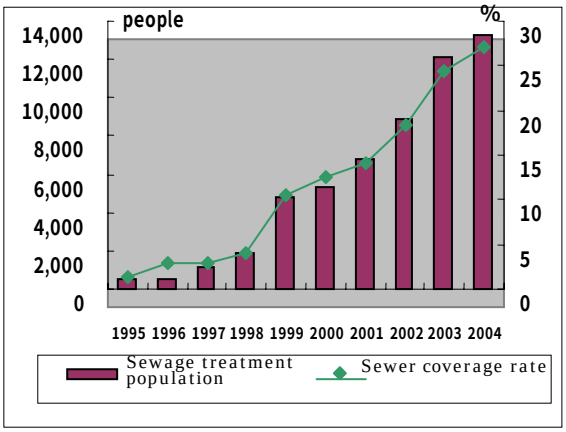
The average daily volume of sewage treated increased from 9,168 m^3/day in 2000 prior to the project (the volume treated by 3 old sewage treatment plants) to 9,800 m^3/day in 2004 subsequent to the project (the volume treated by newly constructed sewage treatment plant alone. The 3 old sewage treatment plants were closed after the project.) The facility utilization rate of the new treatment plant was declining, at 60% in 2001, 54% in 2002, and 57% in 2003, but it recovered to 62% in 2004 (Figure 8). The volume of treated sewage

[7] Sewage Treatment Population = number of general sewer contracts × persons per household (the average number of persons per household in Jerba is 3.27 persons)

[8] Sewer Coverage Rate= sewage treatment population ÷ population of residents in area that benefited from the project × 100

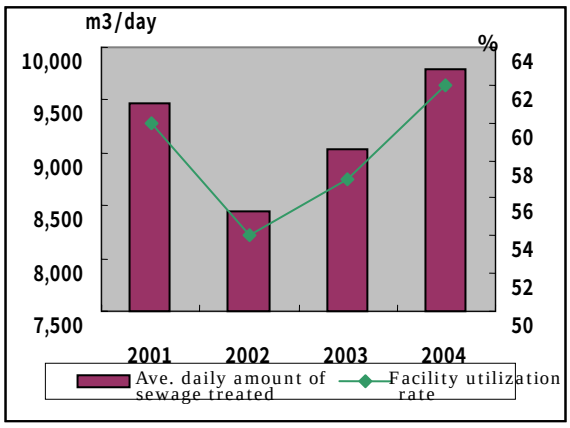
declined in 2002 and 2003, but this was because of the decreased number of tourists in Jerba due to the 9-11 terrorism incident in the US and the terrorist bombing of a synagogue on Jerba Island, as stated above.

Figure 7: Sewage Treatment Population and Sewer Coverage Rate



Source：ONAS

Figure 8: Ave. Daily Amount of Sewage Treated and Facility Utilization Rate



Source：ONAS

The BOD[9] concentration of the water released from the treatment plant and the removal rate have been better than the planned levels since 2002 (Table 3). These levels meet the emission standards of Japan as well as Tunisia. Some of the treated water is currently being used to irrigate vegetation on the treatment plant grounds, and an agriculture development project with 110 ha is also underway near the treatment plant. The project expects that 25% of the treated water is going to be used for irrigation purposes in the future.

Table 3: BOD Concentration at Sewage Treatment Plant

BOD Concentration	Planned (at Appraisal)	2002	2003	2004	Emission Standard
Incoming Water (mg/l)	213	143	163	182	Tunisia's Emission Standards BOD of water released: less than 30 mg/l Japan's Emission Standards BOD of water released less than 20 mg/l
Released Water (mg/l)	Less than 30	5	8	7.3	
Removal Rate (%)	90	96	95	96	

Source: ONAS
Note: All figures are annual averages

(2) Recalculation of Financial Internal Rate of Return for the Sewer Portion

The financial internal rate of return (FIRR) for the sewer system was calculated at the time of appraisal as 6.1%, taking as expenses the construction cost and operation and maintenance

[9] Biochemical Oxygen Demand (BOD) is an index that indicates the level of contamination due to organic matter in river water and as such. It represents the amount of oxygen that is consumed when organic matter in the water is oxidized by microorganisms during a fixed time at a fixed temperature. The higher the numerical figure, the greater the amount of organic matter and the greater the contamination.

cost, taking as a benefit the fee income from the sewer built by the project, and assuming a project life of 43 years including the construction period. When the FIRR was recalculated for the evaluation using the same conditions as for the appraisal, the result was 12.9%. The reason why the level was higher than at the time of appraisal is that the benefit increased due to a hike in sewer fees. (The sewer fee in the appraisal's sewer fee plan was 0.425 dinars/m^3, but the fee was doubled to 0.877 dinars/m^3 in 2001.)

2.4 Impact

2.4.1. Improvement of Residents' Living Condition and Sanitation Environment

(1) Results of Beneficiary Survey of Residents

A beneficiary survey towards 166 households[10] in Jerba and Zarzis was conducted to measure the impact of this project on the residents' living condition and sanitation environment. Concerning the water supply, 123 households (approximately 74%) out of 166 households responded that "the water supply is sufficient or nearly sufficient." On the other hand, 86 households (approximately 52%) out of 166 households replied that the water "tastes bad," and only 30 households (approximately 18%) replied that they "use it as drinking water." The reasons for this include the fact that the water supplied in Jerba and Zarzis is still salty, with a saline concentration of more than 1,000 mg/l, though it meets Tunsia's standards, and the residents customarily use rainwater rather than piped water as drinking water. Out of the 136 households not using the piped water as drinking water, 108 households drink rainwater, 17 households drink water sold by venders, 9 households drink well's water, and 2 households use water from public faucets.

Concerning the sewage system, 2 households out of 28 households replied that the sewer pipes "get clogged." Also, 18 households out of 28 households replied that the sewer "smells bad." These problems are thought to occur primarily in places near the houses, but this survey was unable to pinpoint the causes[11].

(2) Reduction of Infant Mortality Rate

A direct connection with the project could not be verified, but according to the data in Jerba and Zarzis that could be obtained, the infant mortality rate (younger than one year old) declined from 26.2 infants per 1,000 in 1995 to 9.7 infants in 2004. (c.f., the 2003 infant mortality rates in Tunisia and Japan were 19 infants and 3 infants, respectively.)

[10] Of the 166 households participating in the beneficiary survey (including 112 households in Jerba and 54 households in Zarzis), all 166 households participated in the portion of the beneficiary survey concerning the water supply, and 28 households (all located in Jerba) out of the 166 households participated in the portion of the beneficiary survey concerning the sewer system.

[11] The executing agency is responding to these problems in its daily repair activities.

2.4.2. Promotion of Tourism Industry

(1) Increase in the Number of Hotels and Beds

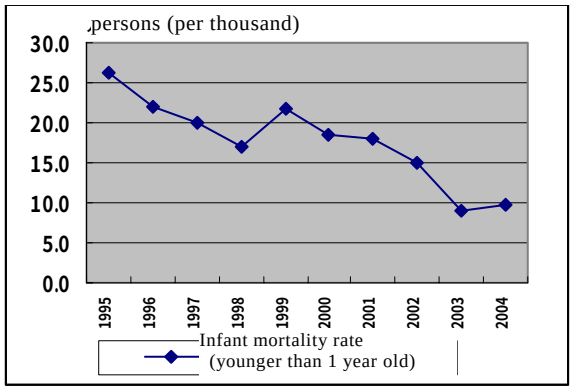
The number of hotels and beds in Jerba and Zarzis increased from 144 hotels and 45,307 beds in 2001 to 151 hotels and 49,317 beds in 2003.

(2) Result of Beneficiary Survey towards Hotels

To measure the impact that the project had on promoting the tourism industry[12], a beneficiary survey towards 11 hotels in Jerba and Zarzis was implemented. In the survey, 9 out of 11 hotels responded that both the volume of the water supplied and the water quality improved following the project.

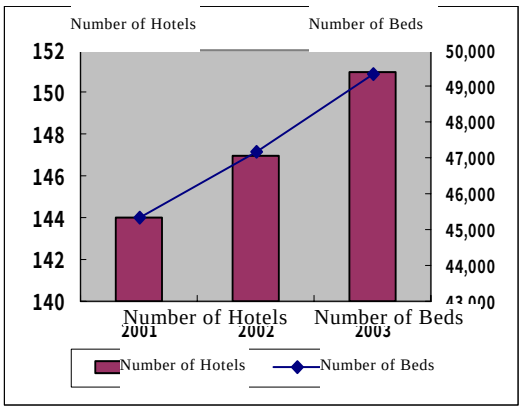
Also, 3 hotels replied that the project had a positive impact on the tourism industry because the environment was improved by the stoppage of sewer outflows and the disappearance of foul smells from contaminated water[13].

Figure 9: Infant Mortality Rate in Jerba and Zarzis



Source: Tunisian Ministry of Public Health

Figure 10: Number of Hotels and Beds in Jerba and Zarzis



Source: Tunisian Ministry of Tourism, Trade, and Handicrafts

2.5 Sustainability

2.5.1 Executing Agency

2.5.1.1 Technical Capacity

(1) Water Supply (Executing Agency: SONEDE)

For its staff, SONEDE implements regular training concerning the water supply facilities, including the desalination plants and the maintenance of the remote-control management system. There is a sufficient number of staff for operation and maintenance, and there are no technical problems.

(2) Sewage System (Executing Agency: ONAS)

[12] In 2003, there were approximately 125,000 tourists (calculated from data of the Tunisian Government's tourism bureau).

[13] Prior to the project, foul smells from the existing sewage treatment plant near the tourist zone drifted over to the hotel area. However following the project, the old sewage treatment plant was closed, and the new sewage treatment plant located away from the hotel area went into operation. So, the sewer outflows and foul smells from contaminated water stopped.

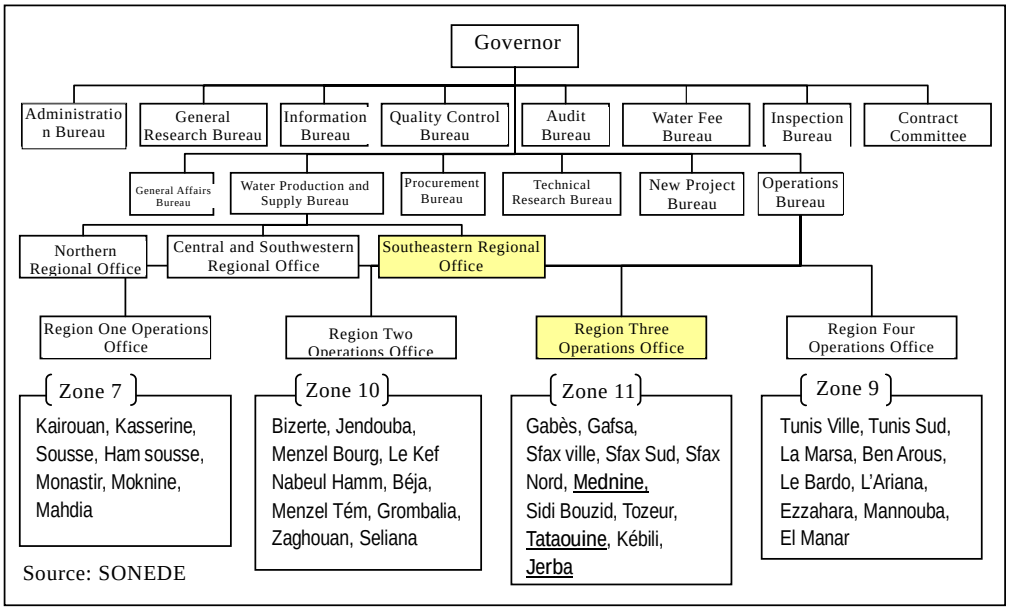
ONAS operates and maintains the 69 similar sewage treatment facilities across Tunisia, and a monitoring system is also in place. There is a sufficient number of staff for operation and maintenance, and there are no technical problems.

2.5.1.2 Operation and Maintenance System

(1) Water Supply (Executing Agency: SONEDE)

SONEDE is a public corporation established in 1968 under the jurisdiction of Tunisia's Ministry of Agriculture. It has a total of approximately 7,100 employees. With regard to this project's facilities, operation and maintenance are handled by the Southeast Regional Office under the Water Production and Supply Bureau and by the Region Three Operations Office under the Operation Bureau. This ex-post evaluation study did not find any organizational problems (Figure 11).

Figure 11: SONEDE Organization



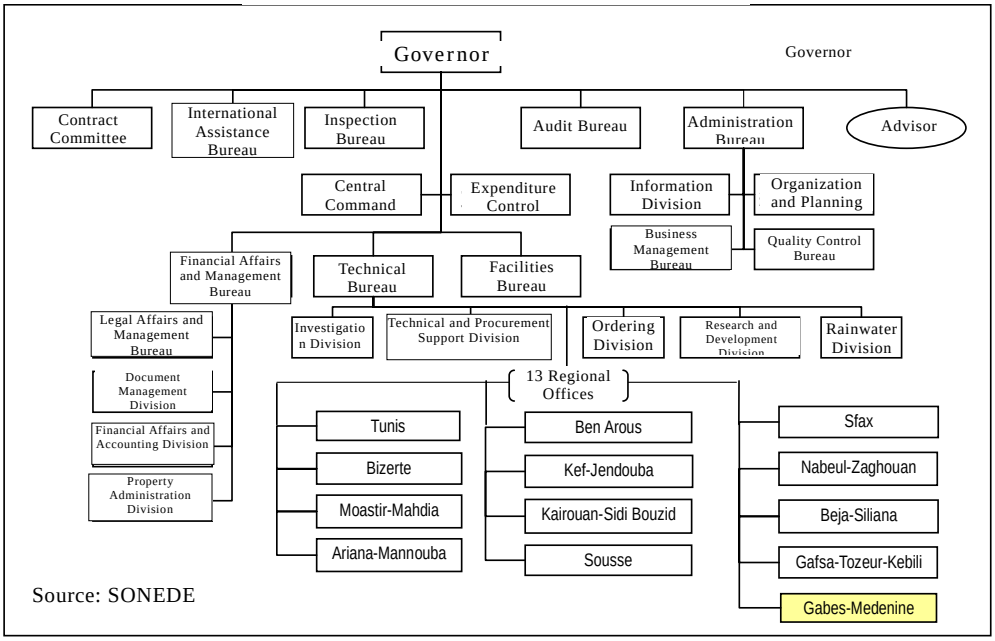
(2) Sewage System (Executing Agency: ONAS)

ONAS is a public corporation established in 1974 under the jurisdiction of Tunisia's Ministry of Environment. It has a total of approximately 5,700 employees. With regard to this project's facilities, operation and maintenance are handled by the Gabes-Medenine Regional Office which is under the Technical Bureau. This ex-post evaluation study did not find any organizational problems (Figure 12).

2.5.1.3 Financial Status

(1) Water Supply (Executing Agency: SONEDE)

Figure 12: ONAS Organization Chart



Source: SONEDE

Sales increased from 180 million dinars in 2001 to 190 million dinars in 2003, but due to increases in personnel expenses and depreciation costs, current profit was halved between 2001 and 2003 (Table 4). Currently SONEDE is planning to increase rates by 7% every other year with the aim of putting its finances on sounder footing.

Table 4: SONEDE's Main Financial Data

	2001	2002	2003
(a) Total Assets	934,215	1,020,264	1,083,946
(b) Current Assets	138,521	184,589	197,364
(c) Current Liabilities	121,232	129,964	150,772
(d) Assets	639,055	728,348	760,277
(e) Sales	181,940	179,651	194,432
(f) Operating Profit (Loss)	11,849	-372	-1,189
(g) Current Profit	13,068	7,040	6,421
Return on Assets (ROA)(%) (g)/(a)	1.39	0.69	0.59
Operating Income to Net Sales Ratio(%) (g)/(e)	7.18	3.91	3.30
Turnover Ratio of Total Liabilities and Net Worth (e)/(a)	0.19	0.18	0.18
Current Ratio(%) (b)/(c)	114.26	142.03	130.90
Equity Ratio(%) (d)/(a)	68.41	71.39	70.14

Source: SONEDE

source: SONEDE financial statements (unit: 1,000 dinars)

Note 1: The figure for total assets is the average of the beginning of the year figure and the yearend figure.

(2) Sewage System (Executing Agency: ONAS)

Sales increased from 91 million dinars in 2001 to 97 million dinars in 2003, but due to increases in personnel expenses and depreciation costs, current loss expanded considerably (Table 5). For policy reasons, no hike in sewer fees is planned, and the subsidies received from the government for operation and maintenance are scheduled to continue.

Table 5: ONAS's Main Financial Data

	2001	2002	2003
(a) Total Assets	900,545	977,900	1,074,808
(b) Current Assets	101,884	105,387	124,805
(c) Current Liabilities	88,717	103,540	123,884
(d) Assets	649,527	691,725	732,582
(e) Sales	91,029	94,496	97,414
(f) Operating Profit (Loss)	-15,856	-26,257	-34,828
(g) Current Profit	-14,550	-24,102	-32,455
Return on Assets (ROA)(%) (g)/(a)	-1.61	-2.46	-3.01
Operating Income to Net Sales Ratio(%) (g)/(e)	-15.98	-25.50	-33.31
Turnover Ratio of Total Liabilities and Net Worth (e)/(a)	0.10	0.10	0.09
Current Ratio(%) (b)/(c)	114.84	101.78	100.74
Equity Ratio(%) (d)/(a)	72.13	70.74	68.16

source: SONEDE financial statements (unit: 1,000 dinars)

Note 1: The figure for total assets is the average of the beginning of the year figure and the yearend figure.

2.5.2 Operation and Maintenance Status

Operation and maintenance are being carried out appropriately for both the water supply system (SONEDE) and the sewage system (ONAS).

3. Feedback

3.1 Lessons Learned

None

3.2 Recommendations

None

Comparison of Original and Actual Scope

Item	Planned	Actual Performance
1. Output		
Water Supply Portion		
(a) Desalination Plants	Jerba 1 location (12,000 m3/day) Zarzis 1 location (12,000 m3/day)	Increased to 15,000 m3/day in both locations
(b) Deep Wells	Jerba 3 locations, Zarzis7 locations, Ben Guerdan 2 locations	Jerba 6 locations, Zarzis same as left, Ben Guerdan same as left
(c) Reservoirs	Jerba 1 location, Zarzis 1 location	Jerba 2 locations, Zarzis same as left, Medenine 1 location, Tataouine 1 location
(d) Aqueducts	Jerba 26 km, Zarzis 37 km、Ben Guerdan 60 km	Jerba 40 km, Zarzis 69 km, Ben Guerdan same as left
(e) Water Pipes	Jerba 91 km	Same as left
(f) Pressure Pump Station	Medenine 1 location	Same as left
(g) Consulting Service	11 M/M	34 M/M Addition: Intake pump stations: one each in Medenine, Tataouine
Sewer System Portion		
(h) Sewage Treatment Plant	Jerba 1 location (15,750 m^3/day)	Same as left
(i) Pump Station	Jerba 5 locations	Same as left
(j) Sewer Pipes (mainline)	Jerba 23 km	Jerba 30 km
(k) Sewer Pipes (branch lines)	Jerba 7 km	Jerba 12 km
(l) Operation and Maintenance Vehicles	14 vehicles	Same as left
(m) Consulting Service	29 M/M	30 M/M
2. Project Period	Overall: March 1995 to June 1998 (40 months) Water Supply: same as above Sewer: same as above	Overall: March 1995 to December 2002 (94 months) Water Supply: March 1995 to February 2003 (96 months) Sewer: March 1995 to December 2002 (94 months) (If additional output is excluded, the water portion was 71 months)
3. Project Cost		
Foreign Currency	5,157 million yen	4,737 million yen
Local Currency	4,945 million yen (49 million dinars)	2,530 million yen (27 million dinars)
Total	10,102 million yen	7,267 million yen
ODA Loan Portion	7,577 million yen	6,053 million yen
Exchange Rate	1 dinar=101 yen (as of July 1994)	1 dinar＝95 yen (simple average from 1997 to 2002)